

CLAIMS

What is claimed is:

1. A process of electrocoating a substrate with at least two electrodedepositable layers comprising the steps of:
 - 5 (a) cathodically electrodepositing a primer coating composition to a substrate by immersion of a substrate in a cathodic electrocoating composition;
 - (b) anodically electrodepositing a primer surfacer coating composition onto the substrate by immersion of a substrate in an anodic electrocoating composition; and
 - 10 (c) curing the at least two electrodedepositable layers disposed upon the substrate simultaneously in a single bake;wherein the primer coating composition is still wet when step (b) is performed.
- 15 2. The process according to claim 1, wherein the cathodic electrocoating composition comprises an aqueous coating composition having a solids content of about 5% to about 50% by weight of an emulsion, an organic coalescing solvent, and an alkyl tin oxide dissolves in an acid, wherein the cathodic coating composition has a pH of about 5 to about 20 8.
- 25 3. The process according to claim 2, wherein the emulsion contains a cathodic film-forming resin, a blocked polyisocyanate cross-linking agent and optional additives, wherein the optional additives are about 0.1% to about 20% by weight of the binder of the coating composition.
- 30 4. The process according to claim 3, wherein the cathodic film-forming resin comprises an epoxy-amine adduct and a cross-linking agent, wherein the emulsion is dispersed in an aqueous medium.

5. The process according to claim 3, wherein the blocked polyisocyanate cross-linking agent is selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates.

- 5 6. The process according to claim 5, where the blocked polyisocyanate cross-linking agent is selected from the group consisting of hexamethylene diisocyanate, cyclohexamethylene diisocyanate, toluene diisocyanate, and methylene diphenyl diisocyanate, polymeric methylene diphenyl diisocyanate.

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7. The process according to claim 3, wherein the optional additive is selected from the group consisting of ultra-violet absorbers, antioxidants, wetting agents, surfactants, defoamers and combinations thereof.

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8. The process according to claim 1, wherein the primer coating composition contains less than about 5% of a pigment.

9. The process according to claim 8, wherein the pigment is selected from the group consisting of titanium dioxide, basic lead silicate, strontium chromate, iron oxide, zinc chromate, carbon black, talc, aluminum silicate, precipitated barium sulfate, basic lead sulfate, aluminum phosphomolybdate, zinc hydroxy phosphite, a metallic pigment, an extender pigment, clay and combinations thereof.

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10. The process according to claim 1, wherein the anodic electrocoating composition is an aqueous coating composition containing an emulsion of an anionic film forming resin binder and a cross-linking agent

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11. The process according to claim 10, wherein the anodic film-forming binder is selected from the group consisting of urethane oligomers, waterborne anodic polyesters, and anodic acrylics.

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12. The process according to claim 11, wherein the anodic film-forming resin binder is prepared by copolymerizing a (meth)acrylate with an ethyleneically unsaturated monomer having an acid group and optional another ethyleneically unsaturated monomer.

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13. The method according to claim 11, wherein the urethane oligomer has a molecular weight of less than about 3000.

10 14. The method according to claim 10, wherein the cross-linking agent is selected from selected from the group consisting of etherified methylol phenols, methylolphenols, blocked isocyanates and melamine resins.

15 15. A process of electrocoating a substrate with at least two electrodeposable layers comprising the steps of:

15 (a) cathodically electrodepositing a primer coating composition to a substrate by immersion of a substrate in a cathodic electrocoating composition, wherein the primer coating composition comprises an aqueous coating composition having a solids content of about 5% to about 50% by weight of an emulsion containing a cathodic film forming binder, a blocked polyisocyanate cross-linking agent, an organic coalescing solvent, and an alkyl tin oxide dissolved in an acid, and the cathodic coating composition has a pH of about 5 to about 8,

20 (b) anodically electrodepositing a primer surfacer coating composition onto the substrate by immersion of a substrate in an anodic electrocoating composition; and

25 (c) curing the at least two electrodeposable layers disposed upon the substrate simultaneously in a single bake;
30 wherein the primer coating composition is still wet when step (b) is performed.

16. A substrate coated according to the process of claim 1.